REMARKS

Applicant thanks the Examiner for the very thorough consideration given the present application.

Claims 1-57 are now present in this application. Claims 18-57 are added and the Title of the Invention is changed to correct the spelling of one word in the title. No new matter is involved. Claims 1, 7, 18, 41 and 53 are independent.

Reconsideration of this application, as amended, is respectfully requested.

Substitute Specification

A Substitute Specification is being provided in order to place the application in better form. Also included is a marked-up copy of the original specification, which shows the portions of the original specification that are being added and deleted. Applicant respectfully submits that the substitute specification includes no new matter and that the substitute specification includes the same changes as are indicated in the marked-up copy of the original specification showing additions and deletions.

Priority Under 35 U.S.C. §119

Applicant thanks the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. §119, and receipt of the certified priority document.

Rejections under 35 U.S.C. §103

Claims 1-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,567,011 to Young et al. (hereinafter, "Young") in view of U.S. Patent 6,469,633 to Wachter. This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

Applicant respectfully submits that neither Young nor Wachter discloses or suggests the claimed invention. For example, neither Young nor Wachter discloses (1) "a controller that . . . produces a code conversion control signal" or (2) " a memory storing code conversion data" or (3) a code converter converting the code into a code corresponding to the verified peripheral media device using the code conversion data stored in the memory by responding to the code conversion control signal," or (4) the code converted outputting the converted code to the verified peripheral device through the communication port by responding to the output control signal."

In response to these arguments, which were presented in the Amendment filed on May 12, 2004, the Office Action states that the claimed "code conversion data" is anticipated by Young's database, and that col. 5, lines 25-32 of Young discloses (1) a controller that . . . produces a code conversion control signal" or (2) a memory storing code conversion data' or (3)("a code converter converting the code into a code corresponding to the verified peripheral media device using the code conversion data stored in the memory by responding to the code conversion control signal" or (4) the code converted outputting the converted code to the verified peripheral device through the communication port by responding to the output control signal.

Applicants respectfully disagree. Applicant has not only read Young, but has done a computerized word search of the Young patent and is unable to find the words "convert" or "conversion." The section of Young, i.e., col. 5, lines 25-32, that the Office Action alleges discloses the four quoted conversion features merely discloses loading ID codes into the remote control device, where the ID codes may correspond to a database having the available functions for a device to be controlled. There is absolutely no disclosure of converting one ID code into another ID code.

Thus, these arguments, found on pages 1 and 2 of the outstanding Office Action, fail to properly rebut Applicant's arguments and fails to explain how the outstanding rejections of claims 1-17 make out a *prima facie* case of obviousness

of the claimed invention.

The Office Action alleges, in general, that with respect to claim 1, Young "discloses all the claimed subject matter . . ." Then, on page 3, the Office Action admits that Young does not disclose the "claimed communication port to be connected with the peripheral media devices through a communication line" feature. These statements are completely contradictory and it is improper to base a rejection on a contradiction.

The Office Action also alleges that Young "produces a code conversion control signal and an output control signal is met by the receiver device 20 which configured to receive a selected input signal when the selected input signal from one of the input devices 30 and 40" (Fig. 1, col. 6, line 66 to col. 7, line 21).

Applicant respectfully disagrees. In col. 6, line 66 to col. 7, line 21, Young discloses that "the receiver 20 is adapted to receive a plurality of input signals" and that "[F]irst and second input devices 30 or 40 are connected to supply the respective input signals to the received 20, and mode programming, preferably stored in memory is responsive to the mode keys, e.g., first input mode key 112, and programmed to activate corresponding modes." Young says nothing about code conversion in this part of his disclosure, or in any other part of his disclosure.

Thus, Young fails to explicitly disclose "code conversion" or "producing a code conversion control signal."

Perhaps the Office Action is relying on the doctrine of inherent disclosure, without saying so, although it should say so if it is relying on the doctrine of inherency.

Applicant respectfully submits that the Office Action provides no evidence why Young discloses "code conversion" or "producing a code conversion control signal" inherently.

Inherency may not be established by probabilities or possibilities. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

For the doctrine of inherency to apply, if an element is not expressly disclosed in a prior art reference, the reference will still be deemed to disclose a missing element if the missing element "is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Cont'l Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Inherent disclosure requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." Trintec Indus., Inc. v. Top-U.S.A. Corp., 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599(Fed. Cir. 2002) (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

Because Young does not explicitly disclose "a code conversion control signal" and because the Office Action does not provide any evidence to explain why "a code conversion control signal" is necessarily disclosed, the Office Action has not made out a *prima facie* case of obviousness of the invention of claims 1-6, as alleged. Thus, the rejection is improper and should be withdrawn.

The Office Action then alleges that Young discloses the claimed code converter converting the code into a code corresponding to the verified peripheral media device by referring to col. 9, lines 3-40 of Young. However, the Office Action offers no explanation of why col. 9, lines 3-40 of Young discloses this claimed feature (recited in claims, 1-6, the corresponding code converting method being recited in claims 7-17). Applicants respectfully submit that col. 9, lines 3-40 of Young merely discloses how to verify a device ID code for a mode (col. 9, lines 8, ff.) and how to specify customized default device ID codes per mode (col. 9, lines 24, ff.) and, after a valid ID code has been set, how to lock and unlock the ID code for a specific mode (col. 9, lines 30, ff.). None of this disclosure of col. 9, lines 3-40 has anything to do with a code converter converting code into a code corresponding to a verified peripheral media device, or the corresponding code converting method.

Thus, Young fails to disclose these claimed features.

As noted above, the Office Action further admits that Young does not explicitly disclose the claimed communication port to be connected with the peripheral media devices through a communication line.

In an attempt to remedy this admitted deficiency, the Office Action turns to Wachter, which controls a plurality of remote controllable electronic devices (RCEDs) using a central processing unit 2 to generate a control signal, e.g., an appropriate infrared code, to one or more appropriate RCEDs – see col. 6, lines 38-63, for example.

Initially, Applicant notes that Wachter suffers from the same aforementioned deficiencies as does Young.

So, even if these two references were properly combined (which they are not for reasons stated below) they would not result in, or render obvious, the claimed invention recited in claims 1-17.

Moreover, the Office Action has not provided proper motivation to modify Young in view of Wachter. In the first place, Young works well without the need to incorporate a communication port to be connected with the peripheral media devices through a communication line and does not generate any converted code to be outputted to a media peripheral device through the communication port. In the second place, Wachter's communication port is connected to a CPU which generates different signals to activate a plurality of RCEDs, whereas Young has only one remote 100, and has no need to use a CPU to activate his one remote

100. Therefore, there would be no motivation to add a communication port like the one in Wachter to Young. In the third place, the Office Action never states how the communication port added to Young would fit in with, and/or operate with Young's remote control that has no need for such a communication port or for a CPU that uses the communication port. This essential feature of an obviousness rejection is totally missing and is left solely to speculation. It is well settled that a rejection cannot be based on speculation. An Examiner may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis, See, In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), Cert. Denied.

The Office Action alleges that a skilled worker would be motivated to modify Young in view of Wachter is "in order to provide a control system for controlling multiple electronic components via a single user-operated remote control device." Evidence of motivation must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999). This reason, urged by the Office, is nothing more than a broad conclusory statement about the teaching of all universal remotes and fails to constitute clear and particular evidence that

would give a skilled worker the motivation to combine these disparate references.

A fair, balanced view of this rejection reveals that (1) it overlooks the fact that several claimed features of the invention recited in claims 1 and 7 are missing from both references, so that even if the references were properly combined, they would not render the claimed invention obvious, and (2) the fundamental differences between the references have not been taken into consideration in making the rejection, as they are required to be in view of Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), differences that teach away from combining the teachings of these two references and vitiate any motivation to combine these references, as alleged.

Accordingly, this rejection of claims 1-17 is improper and should be withdrawn.

With regard to dependent claims 2-6 and 8-17, Applicant submits that claims 2-6 depend, either directly or indirectly, from independent claim 1, and claims 8-17 depend, directly or indirectly from claim 7, which independent claims are allowable for the reasons set forth above, and therefore claims 2-6 and 8-17 are allowable based on their dependence respectively from claims 1 and 7. Reconsideration and allowance thereof are respectfully requested.

New Claims 18-57

Applicant has added claims 18-57 to provide desired coverage of Applicant's invention. No new matter is involved.

With respect to claims 28, 48 and 57, which recite "audio," the original disclosure uses terms such as "voice" and "speaker" and, therefore supports this terminology. It is well settled that *ipsis verbis* disclosure is not necessary to satisfy the written description requirement of section 112. Instead, the disclosure need only reasonably convey to persons skilled in the art that the inventor had possession of the subject matter in question. In re Edwards, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978); and Fujikawa v. Wattanasen, 39 USPQ2d 1895 (Fed. Cir. 1996).

These new claims positively recite features, including code conversion features, that simply are not addressed by either of the two references applied in the rejection of claims 1-17 and, accordingly, are patentable over those applied references.

Additional Cited References

Because the remaining references cited by the Examiner have not been utilized to reject the claims, but have merely been cited to show the state of the art, no comment need be made with respect thereto.

CONCLUSION

All of the stated grounds of rejection have been properly traversed. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By: _James T. Eller, Jr._____

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Attachments: Substitute Specification
                  Marked-Up Substitute Specification

Amendments to the Specification

Please replace the specification with the Substitute Specification being filed concurrently herewith.

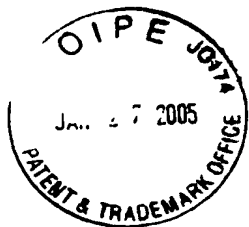Amendment of the Title of the Invention

Please change the title of the invention to read:

REMOTE-CONTROLLABLE MEDIA DEVICE AND METHOD OF

OPERATING PERIPHERAL DEVICES USING THE SAME

OF
Il-Gun KWON

For
REMOTE-CONTROLLABLE MEDIA DEVICE AND METHOD OF OPERATING PERIPHERAL DEVICES USING THE SAME
~~REMOTE-CONTROLLABLE MEDIA DEVICE AND METHOD OF OPERATING PROPHERAL DEVICES USING THE SAME~~
BACKGROUND OF THE INVENTION

Field of the Invention

[01]   The present invention relates to a remote-controllable media device and a method of operating peripheral devices using the same.

Background of the Related Art

[02]   Generally, media devices are means dealing with video signals such as TV set, video cassette recorder(VCR), set-top box, DVD, compact disc (CD) player and the like. Such devices have their own remote controllers respectively and basically are operated remotely with the use of characteristic remote controllers.

[03]   As known widely, many media devices have been developed so far and are used ~~altogether~~ together by being connected to each other. The media devices connected to each other transmits/receives their characteristic data by a user's manipulation. For transmitting/receiving data reciprocally, a user ~~fails to avoid inconvenience as~~ is inconvenienced by using a plurality of remote controllers.

[04]   For instance, when a cable set-top box is connected to a TV receiver, a user has to use a remote controller for the cable set top box operating functions of the cable set-top box, while using another remote controller for the TV receiver for operating functions of the TV receiver. Moreover, the user has to use the remote controller of the TV receiver for adjusting a volume of the TV receiver, while pushing channel buttons on the cable set-top box remote controller to change channels of the cable set-top box. Thus, the user ~~feels so inconvenient as~~ is inconvenienced to manipulate both of the remote controllers for the TV receiver and cable set-top box.

[05]   Meanwhile, the set-top box serves various functions such as TV information guide and the like, it is expected that the remote controller ~~be~~ is likely to be manipulated more frequently. Thus, the manipulation of various remote controllers will be more inconvenient with the expectation of frequent use of the remote controllers to operate various functions of the TV receiver and peripheral devices thereof.

[06]   In order to connect the cable set-top box to the TV receiver, there are two ways for such a connection. First, an RF output port of the cable set-top box is connected to an RF input port of the TV receiver ~~as well as~~ while a receiver channel of the TV receiver is set as channel 3 or channel 4, whereby a viewer ~~enables to~~ can watch a cable-broadcasted

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program through the TV receiver. Second, an output terminal for composite signal of the cable set-top box is connected to an input terminal for an external composite signal of the TV receiver.

[07]   While the above connection is maintained, a remote controller for the cable set-top box is necessary for changing a receiver channel of the cable set-top box. Besides, a remote controller for the TV receiver is necessary as well for adjusting a volume of the TV receiver. Moreover, the characteristic remote controllers should be used for turning on/off the corresponding powers of the TV receiver and the cable set-top box, respectively. Further, the characteristic remote controllers are respectively used for manipulating menus of the TV receiver and cable set-top box as well.

[08]   As mentioned in the above explanation, in order to ~~improve~~ reduce the inconvenience of using the various characteristic remote controllers, a unified remote controller in which remote controller codes of a plurality of media devices are built in has been proposed. Yet, the unified remote controller should be programmed precisely to fit ~~for~~ the corresponding media devices so as to be used properly. The programming is actually too complicated to be carried out precisely by a user. Besides, the unified remote controller is unable to be used for manipulating the media device provided that the remote controller code of the corresponding media device has not been programmed therein.

SUMMARY OF THE INVENTION

[09]   Accordingly, the present invention is directed to a remote-controllable media device and a method of operating peripheral devices using the same that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[10]   An object of the present invention is to provide a remote-controllable media device and a method of operating peripheral devices using the same enabling ~~to easily operate~~ easy operation of peripheral media devices connected to a media device using a remote controller of the media device.

[11]   Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[12]   To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a method of operating peripheral media devices using a media device having a remote controller according to the present invention includes the steps of monitoring whether a remote code is received from a remote controller, verifying that a present external input source mode corresponds to which one of the peripheral media devices when the remote

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code is received from the remote controller, and converting the received code into a code corresponding to the present external input source mode when the peripheral media device corresponding to the present external input source mode is connected to the media device and then transferring the converted code to the peripheral media device corresponding to the present external input source mode.

[13]   Preferably, the method further includes the step of displaying on a screen whether the media device and the peripheral media device corresponding to the present external input source mode are connected to each other.

[14]   Preferably, the method further includes the step of displaying character and video signals from the peripheral media device corresponding to the present external input source mode on a screen of the media device in accordance with the remote code.

[15]   Preferably, the method further includes the steps of processing the code to operate the media device itself when the peripheral media device corresponding to the present external input source mode fails to be connected to the media device or the present external input source mode corresponds to the media device itself, and operating the media device in accordance with a command corresponding to the processed code.

[16]   More preferably, information of the code processed by the media device itself includes volume adjustment of the media device and change of the present external input source mode.

[17]   Preferably, the media device and peripheral media devices include TV receiver, DVD, video cassette recorder, and set-top box.

[18]   Preferably, the method further includes the steps of executing a command corresponding to the converted code in the peripheral media device corresponding to the present external input source mode, transferring an execution result from the peripheral media device corresponding to the present external input source mode to the media device, and displaying an image according to the execution result on a screen and outputting a voice according to the execution result through a speaker of the media device.

[19]   Preferably, the method further includes the step of providing a communication channel set-on or set-off signal from the remote controller to the media device by a user's selection so as to turning on or off a mode for establishing communication channels between the media device and the peripheral media devices.

[20]   More preferably, the communication channel set-on signal is provided when the peripheral media devices have the same communication ports of the media device on an on-screen display menu of the media device from the remote controller by a user and wherein the communication channel set-off signal is provided when the peripheral media devices fail to have the same communication ports of the media device on an on-screen display menu of the media device from the remote controller by a user.

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[21]   More preferably, the communication port is one of RS232C, I2C, and parallel port.

[22]   Preferably, the method further includes the steps of monitoring whether a code to change the present external input source mode into a new external input source mode is produced from the remote controller, and relieving the established communication channel between the present external input source and the media device and establishing a new communication channel between the new external input source and the media device.

[23]   In another aspect of the present invention, a media device according to the present invention includes a remote controller producing a remote code for controlling for its own use, a remote code for controlling peripheral media devices, and selection signals of external input sources in accordance with a user's selection, a communication port to be connected with the peripheral media devices through an exclusive communication line, a receiver part receiving one of the remote codes from the remote controller, a controller verifying that a present external input source corresponds to which one of the peripheral media devices and produces a code conversion control signal and an output control signal, a memory storing code conversion data, and a code converter converting the code into a code corresponding to the verified peripheral media device using the code conversion data stored in the memory by responding to the code conversion control signal, the code converter outputting the converted code to the verified peripheral media device through the communication port by responding to the output control signal.

[24]   It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[25]   The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

[26]   FIG. 1 illustrates a block diagram of a media device according to the present invention;

[27]   FIG. 2 illustrates a diagram for wired connection between a TV receiver and a cable set-top box according to the present invention;

[28]   FIG. 3 illustrates keys arranged on a remote controller for a TV receiver which are required for realizing a media device and a method thereof according to the present invention; and

[29]   FIG. 4 illustrates a diagram of a message displayed on a screen of a TV receiver for a channel establishment between the TV receiver and a set-top box.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[30] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[31] FIG. 1 illustrates a block diagram of a media device according to the present invention.

[32] Referring to FIG. 1, a media device according to the present invention includes a remote controller 1, a receiver part 2, a communication port 3, a controller 4, a memory, and a code converter 6.

[33] The remote controller produces a remote code for controlling the media device itself and other remote codes for other peripheral media devices in accordance with a user's choice. The receiver part 2 receives the remote code ~~form~~ from the remote controller 1 and processes the received code into a form enabling recognition by the controller 4 ~~to recognize~~. The communication port 3 is established so as to form communication channels with other communication ports of the peripheral media devices. The controller 4, when receiving the remote code, verifies ~~what~~ which media device among the peripheral media devices corresponds to a present input source mode and then produces a code conversion control signal ~~for~~ in accordance with a result of the verification. Besides, the controller 4 verifies that the peripheral media device corresponding to the present external input mode is connected to the communication port 3 ~~of itself~~, converts the code into a form fit for the verified peripheral media device if the peripheral media device corresponding to the present external input mode is connected to the communication port 3 ~~of itself~~, and then produces an output control signal for outputting the converted code to the verified peripheral media device. The memory 5 stores code conversion data and outputs the stored code conversion data in accordance with a control of the controller 4. The code converter 6 responds to the code conversion control signal from the controller 4 and converts the remote code into a code for the verified peripheral media device using the code conversion data. ~~And, the~~ The code convert 6 responds to the output control signal and outputs the converted code to the verified peripheral media device through the communication port 3.

[34] The media device in FIG. 1 enables ~~to operate the~~ operation of peripheral media devices having the same communication ports through the remote controller 1. ~~And, the~~ The media device in FIG. 1 is one of ~~TV~~ a television (TV) receiver, ~~cassette tape~~ a videocassette recorder, a DVD~~,~~ player, a set-top box and the like.

[35] Operation of the media device in FIG. 1 is explained as follows. Referring to FIG. 1, the media device requires a communication port 3 such as an RS-232 ~~essentially~~ serial port. And, the peripheral media devices require the same communication ports so as to be connected to the communication port 3. Besides, the communication port 3 may be one of an I2C bus port and a parallel port. Once the remote controller 1 for the media device produces a remote code by a user's selection, the receiver part 2

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receives the remote code and then processes the received remote code into a signal having a form enabling recognition by the controller 4 to recognize. The receiver part 2 then transfers the processed code to the controller 4. The controller 4 judges the processed code in accordance with a preset condition. If the processed code is for executing a built-in function of the media device itself, the controller 4 uses the processed code of the remote controller 1 for operating the media device. On the other hand, if the processed code is for operating one of peripheral media devices such as a set-top box and a video cassette recorder (VCR), the code from the remote controller 1 is converted by the code converter 6 into a code for the peripheral media device connected to the media device. Such a converted code responding responds to the output control signal from the controller 4 so as to be transferred to the corresponding peripheral media device through the communication port 3.

[36]   As mentioned in the above description, the media device according to the present invention enables to directly operate direct operation of the peripheral media devices connected to the media device itself using the media device remote controller. For instance, if the media device is a TV receiver, peripheral media devices connected to the TV receiver such as VCR, DVD and set-top box are operated using a remote controller of the TV receiver, whereby it is of no use to operated obviating the need to operate remote controllers for the peripheral media devices additionally.

[37]   Meanwhile, the TV receiver providing provides various input ports enabling to be connected to respective connections to a VCR, DVD player, cable set-top box, satellite set-top box, and PC. In order to realize a method according to the present invention, keys for designating external input sources selectively may be provided on a TV receiver remote controller. When a user designates one of the peripheral media devices connected to the TV receiver using the remote controller, the TV receiver transfers a code outputted from the remote controller to the corresponding media device through a communication port of the corresponding media connected to the communication transport port of the TV receiver itself. The peripheral media device having received the code from the remote controller then executes functions corresponding to the code. Meanwhile, when the user directs the input source to of the TV receiver of the main media device from another peripheral media device, the TV receiver main media device converts the code into another code corresponding to the peripheral media device and then transfers the converted code to the corresponding media device through the communication port.

[38]   FIG. 2 illustrates a diagram for wired connection between a TV receiver (the main media device) and a cable set-top box according to the present invention.

[39]   Referring to FIG. 2, reference numerals/signs '11', '12', '13', 'ANT/CABLE1 and ANT/CABLE2', 'LOOP-OUT', 'V1', 'L1 and R1', '14', '15', 16' '16', '17', '18', 'V2', and 'L2 and R2' R2' are a TV receiver remote controller, a TV receiver, a communication port of the TV receiver, terminals

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of the TV receiver to be connected to an antenna and a cable broadcasting, a loop-out terminal of the TV receiver, a video terminal of the TV receiver, ~~voice~~ audio terminals of the TV receiver, a set-top box, a communication port of the set-top box, an exclusive (dedicated) communication line, a ~~video/voice~~ video/audio line, voice lines, a video terminal of the set-top box, and ~~voice~~ audio terminals of the set-top box. The TV receiver 12 shown in FIG. 12 has the communication port 13 at its back terminal panel, and the set-top box 14 has a communication port at its back panel as well so as to receive a code outputted from the remote controller 11 of the TV receiver 12. The TV receiver 12 and set-top box 14, as shown in FIG. 1, are connected through a wire. ~~Instead,~~ The TV receiver 12 and set-top box 14 may be connected to each other using a wireless connection such as transmission/receiving of IR(infrared) signals. When a pair of media ~~deices~~ devices are connected to each other using such a wireless connection, the reciprocal connection free from the exclusive communication line(RS232) connecting theses media devices is much facilitated.

[40]   While maintaining the above connection, the remote controller 11 of the TV receiver ~~12produces~~ 12 produces a remote code ~~directing toward~~ directed to the TV receiver 12 by a user's selection. In this case, the TV receiver 12 receives the remote code and then ~~judges what~~ detects a present input source mode ~~is~~. If the present input source mode is a mode of the TV receiver's own, the inputted code corresponds to functions of the TV receiver 12. Therefore, the TV receiver 12 processes the code in itself and then carries out the function corresponding to the processed code.

[41]   If the input source mode corresponds to the set-top box 14, the code is transformed into a code corresponding to the set-top box 14 inside the TV receiver 12. The transformed code is then transmitted to the communication port 15 of the set-top box 14 through the exclusive communication line 16.

[42]   Subsequently, the set-top box 14 executes a command corresponding to the transmitted code through the exclusive communication line 16 and then transfers the execution result to the TV receiver through the video and ~~voice~~ audio lines 17 and 18. Thereafter, the TV receiver 12 displays an image according to the execution result on a screen as well as outputs the execution result through a speaker. Thus, the user ~~enables to know~~ can confirm whether the command corresponding to the code is executed through the displayed image or the variation of the ~~voice. So to speak, once~~ output audio. Once the command is executed, an on-screen display (OSD) menu of the set-top box 14 is displayed on the screen of the TV receiver 12 through the video and ~~voice~~ audio lines 17 and 18. As mentioned in the foregoing description, codes from the TV receiver remote controller 11 are transferred to the set-top box 14 through the exclusive communication line 16 by manipulating the remote controller 11 consecutively, the set-top box 14 executes the commands according to the codes, and the results are displayed on the screen of the TV receiver 12. Therefore, ~~the user is fed back with the~~ execution results according to the codes are fed back to the user.

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[43]   If the input source mode is changed into the TV receiver, the code from the TV receiver remote controller 11 needs not be transferred to the set-top box 14. Hence, a communication channel between the TV receiver 12 and set-top box 14 is naturally shut off while the code from the remote controller 11 is processed and used in the TV receiver 12.

[44]   Besides, as an additional step, if the input source mode is changed from the TV receiver into the set-top box, the TV receiver 12 confirms whether the connection between the TV receiver 12 and set-top box 14 is completed. If the connection fails, the TV receiver 12 displays a message that there is no communication channel with the set-top box 14 on its screen. Hence, a user ~~enables to~~ <u>can</u> verify the connection between the TV receiver 12 and set-top box 14. On the contrary, if it is detected that a communication channel between the TV receiver 12 and set-top box 14 is established while the input source mode is changed from the TV receiver 12 into the set-top box 14, the TV receiver 12 displays a message that such a communication channel is established on the screen. Thus, the user ~~enables to~~ <u>can</u> continuously produce another code corresponding to a user-demanding command to the set-top box 14 using the remote controller ~~1~~ <u>11</u> of the TV receiver 12.

[45]   Generally on the menu of the TV receiver 12, there is an item turning on/off communication channel establishments with other peripheral media devices. For instance, when a user purchases a peripheral media device ~~failing to have the same~~ <u>without a</u> communication port ~~of the communication port~~ <u>compatible with that</u> of the TV receiver, the item for the communication channel establishment is turned off. In this case, the TV receiver is connected to the purchased media device using a conventional method.

[46]   On the other hand, when the user owns a TV receiver and peripheral media devices backed up with a communication channel establishment item and intends to use a method according to the present invention, the communication channel establishment item is just turned on ~~be~~ <u>by</u> the user. If this item is turned on, the TV receiver automatically verifies whether a communication channel is established between the TV receiver itself and the peripheral media device when the input source mode is changed into one of the peripheral media devices by a user's selection from the TV receiver. If the reciprocal connection is completed, a message that the reciprocal connection is completed is displayed on a screen. Otherwise, a message that the reciprocal connection fails is displayed on the screen. Moreover, when the user wants no communication channel establishment, ~~it is able to remove~~ the communication channel establishment item <u>may be removed</u> from the menu of the TV receiver. Otherwise, ~~it is able to illustrate~~ the communication channel establishment item <u>appears</u> on the menu of the TV receiver.

[47]   FIG. 3 illustrates keys arranged on a remote controller for a TV receiver which are required for realizing a media device and a method thereof according to the present invention.

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[48]   FIG. 4 illustrates a diagram of a message displayed on a screen of a TV receiver for a channel establishment between the TV receiver and a set-top box.

[49]   Referring to FIG. 3, the arrangement of keys is closely related to establishment of communication channels between the TV receiver and peripheral media devices. The keys for the communication channel establishment and other keys for selecting external input sources are arranged on an upper part of the remote controller, thereby enabling to select a selection or change of the external input sources once as well as verify and a verification of whether the communication channel is established when an arbitrary input source change is made once.

[50]   The remote controller shown in FIG. 3 is a universal type remote controller programmed to produce codes for operating peripheral media devices such as VCR, cable set-top box, DVD and the like connected to a TV receiver. By programming the remote controller using a given method, codes for the peripheral media devices to be connected to the TV receiver are produced. For instance, while the remote controller is precisely programmed, a MODE key in FIG. 3 is pressed so as to produce a remote code for the peripheral media device. Moreover, when the MODE key is pressed, light emitting diodes (LEDs) placed at the top upper part of the remote controller emit lights successively according to the names of the peripheral media devices. The MODE key is provided for controlling a demanded desired peripheral media device when the its corresponding communication channel establishment is not yet established between the TV receiver and the peripheral media devices fails. Meanwhile, when it is able to establish. When communication channels are established between the TV receiver and peripheral media devices, the MODE key is used for setting the input source as the TV receiver all the time.

[51]   The external input source keys shown in FIG. 3 are used for setting the peripheral media devices as external input sources while the peripheral media devices are connected to the TV receiver. Namely, each of these keys designates the corresponding peripheral media device as an external input source in view of the TV receiver. If the external input source keys are pressed, the TV receiver internally changes paths of input source signals coming into externally applied from an external input source. The TV receiver then automatically detects whether a communication channel enabling is established to transfer a code of the remote controller as a for the selected external input source is established.

[52]   For instance, when a communication channel between the DVD and TV receiver fails to be established, a message that the communication channel is not connected is displayed on a screen of the TV receiver and key codes received thereafter from the remote controller are immediately transferred inside the TV receiver. In this case, a command corresponding to the received code is executed inside the TV receiver and then the execution result is displayed on the screen of the TV receiver. First of all, if a MENU key is pressed while the communication channel fails to be established between two media devices, an OSD menu of the TV receiver's

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own is displayed on the screen of the TV receiver. Subsequently, if a DVD key is pressed while the communication channel is established between the TV receiver and DVD, the TV receiver directs paths of video and voice signals to the DVD and confirms that the communication channel is established. A message that the communication channel is established is then displayed on the screen. ~~After which~~ Thereafter, the key codes ~~form~~ from the remote controller are changed into code values of the DVD by the remote controller itself and then sent ~~o~~ to the DVD through an exclusive communication line. In this case, the TV receiver plays the simple role of transferring the received key codes to the DVD.

[53]   When the communication channel is established, if the DVD key as an input source and the MENU key are pressed in order, a menu of the DVD is displayed on a screen of the TV receiver. The menu-related key codes produced thereafter are transferred to the DVD through the communication channel.

[54]   When the communication channels are pre-established between the TV receiver and the peripheral media devices, the key codes of the remote controller ~~requires~~ require a predetermined system so as to be transferred to the peripheral media devices. For instance, ~~it is able to process~~ the key codes of the remote controller are processed differently in accordance with the external input sources. Especially, regarding a volume adjustment of the TV receiver, a key code for mute and volume of the TV receiver is processed inside the TV receiver ~~in direct~~. Namely, when the volume key code is received from the remote controller, the volume key code is directly processed inside the TV receiver regardless of the external input source and fails to be transferred to the selected external input source through the pre-established communication channel. Instead, the code may be transferred to the connected external input source in accordance with the constructional characteristics of the TV receiver.

[55]   Moreover, the TV receiver ~~enables~~ may process the codes from the external input source keys ~~not to be transferred~~ without their transfer to the peripheral media devices connected to the TV receiver. As the external input source keys are ~~actually the keys used only inside~~ keys for use by the TV receiver~~, if is of no use~~ alone, it is unnecessary to transfer the codes to the peripheral media devices connected to the TV receiver. Receiving a code by a specific external input source key, the TV receiver changes internally the input signal path ~~to~~ from the selected external input source. The ~~rest~~ remaining key codes for channel selection, menu-relating matter and the like are transferred to the selected external input source directly when the communication channel is pre-established between the selected external input source and TV receiver.

[56]   As mentioned in the above description of the media device and method thereof according to the present invention, one media device including a communication port and a code converter verifies the channel establishment with the other peripheral media device, thereby enabling to operate the other media device using a remote controller of its own. Accordingly, the present invention ~~enables to prove~~ provides a user with a

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convenience for operating various media devices using a single remote controller.

[57]   The forgoing embodiments are merely exemplary and are not to be construed as limiting the present invention. The present teachings can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.

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ABSTRACT

Disclosed is a remote-controllable media device and method of operating peripheral devices using the same including the steps of monitoring whether a remote code is received from a remote controller, verifying that a present external input source mode corresponds to which one of the peripheral media devices when the remote code is received from the remote controller, and converting the received code into a code corresponding to the present external input source mode when the peripheral media device corresponding to the present external input source mode is connected to the media device and then transferring the converted code to the peripheral media device corresponding to the present external input source mode.